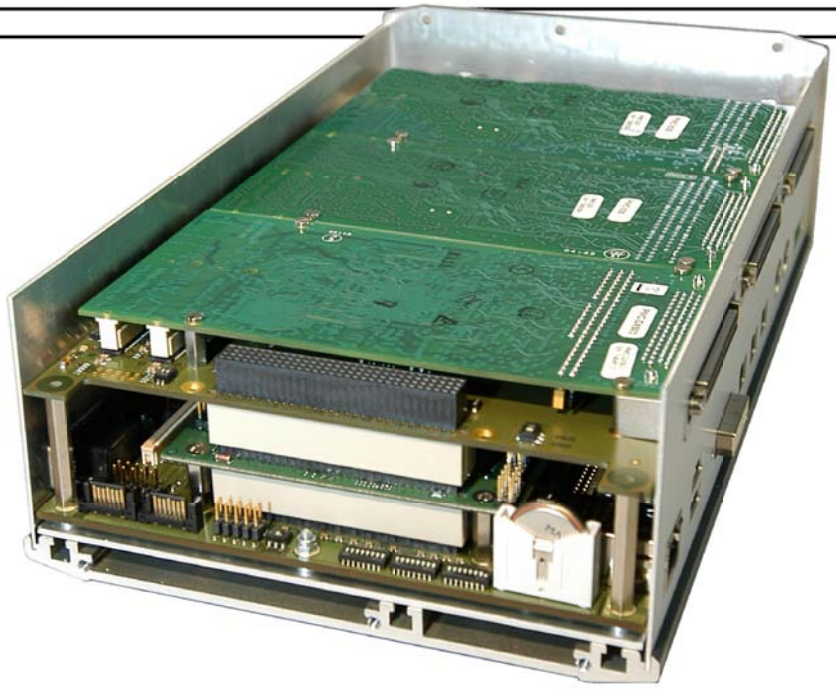
PMC Baseboard (PIPPMC)

The PMC Baseboard (PIPPMC) enables the installation of up to 3 PMC Modules on MPLs series of highly integrated rugged Packaged Industrial PCs (PIP).
The PMC Baseboard is a universal PC/104-*PLUS* extension card and can be used on either 3.3 V or 5 V I/O signaling PC/104-*PLUS* buses. It supports +3.3 V, +5 V, –12 V and +12 V to the PMC modules.

Features:

- Support for up to 3 PMC Modules
- PCI 32 Bit / 33 MHz bus interface
- Universal PC/104-*PLUS* card supports 3.3 V or 5 V PC/104-*PLUS* bus
- Customer selectable V_{IO} voltage (3.3 V or 5 V) for PMC Modules (with different assembly of the distance bolts)
- +/- 12 V generation on board (optional)



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1 INTRODUCTION

1.1 ABOUT THIS MANUAL

This manual provides all the information necessary to handle and configure the PMC Baseboard.
The manual is written for technical personnel responsible for integrating the xxx into their systems.

It is strongly recommended to read this manual before the PMC Baseboard is mounted into a PIP and is powered on.

1.2 SAFTY PRECAUTIONS AND HANDLING

For personal safety and safe operation of the PMC Baseboard, follow all safety procedures described here and in other sections of the manual.

- Remove power from the system before installing (or removing) the PMC Baseboard, to prevent the possibility of personal injury (electrical shock) and / or damage to the product.
- Handle the product carefully; i.e. dropping or mishandling the PMC Baseboard can cause damage to assemblies and components.
- Do not expose the equipment to moisture.

WARNING

There are no user-serviceable components on the PMC Baseboard.

1.3 ELECTROSTATIC DISCHARGE (ESD) PROTECTION

Various electrical components within the product are sensitive to static and electrostatic discharge (ESD). Even a small static discharge can be sufficient to destroy or degrade a component's operation!
Do not touch any electronic components. Handle the PMC Baseboard only on the PCB edges.

1.4 EQUIPMENT SAFETY

Great care is taken by MPL AG that all its products are thoroughly and rigorously tested before leaving the factory to ensure that they are fully operational and conform to specification. However, no matter how reliable a product, there is always the remote possibility that a defect may occur. The occurrence of a defect on this device may, under certain conditions, cause a defect to occur in adjoining and/or connected equipment. It is your responsibility to protect such equipment when installing this device. MPL accepts no responsibility whatsoever for such defects, however caused.

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1.5 MANUAL REVISIONS

1.5.1 RELATED PRODUCTS

Manual Revisions	Related To
A	• PIPPMC-1 Rev. A and later

1.5.2 REVISION HISTORY

Manual Revisions	Date	Description
A	2007-01-29	• Initial release of this document.

1.6 RELATED DOCUMENTATION

The following documents are related to this manual. For detailed Information about a PIP or for more information about a specific topic please refer to this additional manuals and specifications.

Reference	Description	Available from
[1]	PIP BIOS User Manual	MPL AG: www.mpl.ch
[2]	PIP User Manual	MPL AG: www.mpl.ch
[3]	PIP Technical Reference Manual	MPL AG: www.mpl.ch
[4]	PCI2050b PCI-PCI Bridge data sheet	Texas Instruments: www.ti.com
[5]	PCI Local Bus Specification Rev. 2.2	PCI-SIG: www.pcisig.com
[6]	PC/104-*PLUS* Specification, Rev. 2.0	PC/104 Embedded Consortium: www.pc104.org
[7]	IEEE 1386-2001, IEEE Standard for a Common Mezzanine Card (CMC) Family	IEEE Standards Association: standards.ieee.org
[8]	IEEE 1386.1-2001, IEEE Standard Physical and Environmental Layers for PCI Mezzanine Cards (PMC)	IEEE Standards Association: standards.ieee.org

1.7 ORDERING INFORMATION

The table below gives you an overview of the different PMC Baseboard variants and its features.

Product Name	Product Features
PIPPMC-1 Rev. A	• Support for up to 3 PMC Modules on PC/104-*PLUS* slot 0 • Selectable V_{IO} voltage via distance piece • –40 °C to +85 °C • RoHS compliant
	There are also options available for: • +/- 12 V on board support Please contact MPL AG for further information.

2 SPECIFICATION

2.1 ELECTRICAL

- 32 Bit / 33 MHz PCI Bus on PC/104-*PLUS* interface
- 32 Bit / 33 MHz PCI Bus on PMC interface connectors Jn1 and Jn2
- Supports up to 3 PMC Modules
- Texas Instruments PCI2050B PCI-PCI Bridge
- Supports +/- 12 V on board (optional)

2.2 POWER

- 3.3 V, 5 V and V_{IO} current support is depending on the current supported via the PC/104-*PLUS* connector.
- Optional +/- 12 V voltages support, depending on the ordered option, either +/- 250 mA for all three PMC Slots or +/- 250 mA for each of the three PMC Slots.

2.3 ENVIRONMENT

2.3.1 TEMPERATURE RANGE

- –40 °C to +85 °C (-40 °F to +185 °F)

2.3.2 RELATIVE HUMIDITY

- 10% to 90% non-condensing

3 HARDWARE REFERENCE

3.1 DIMENSIONS AND PLACEMENT

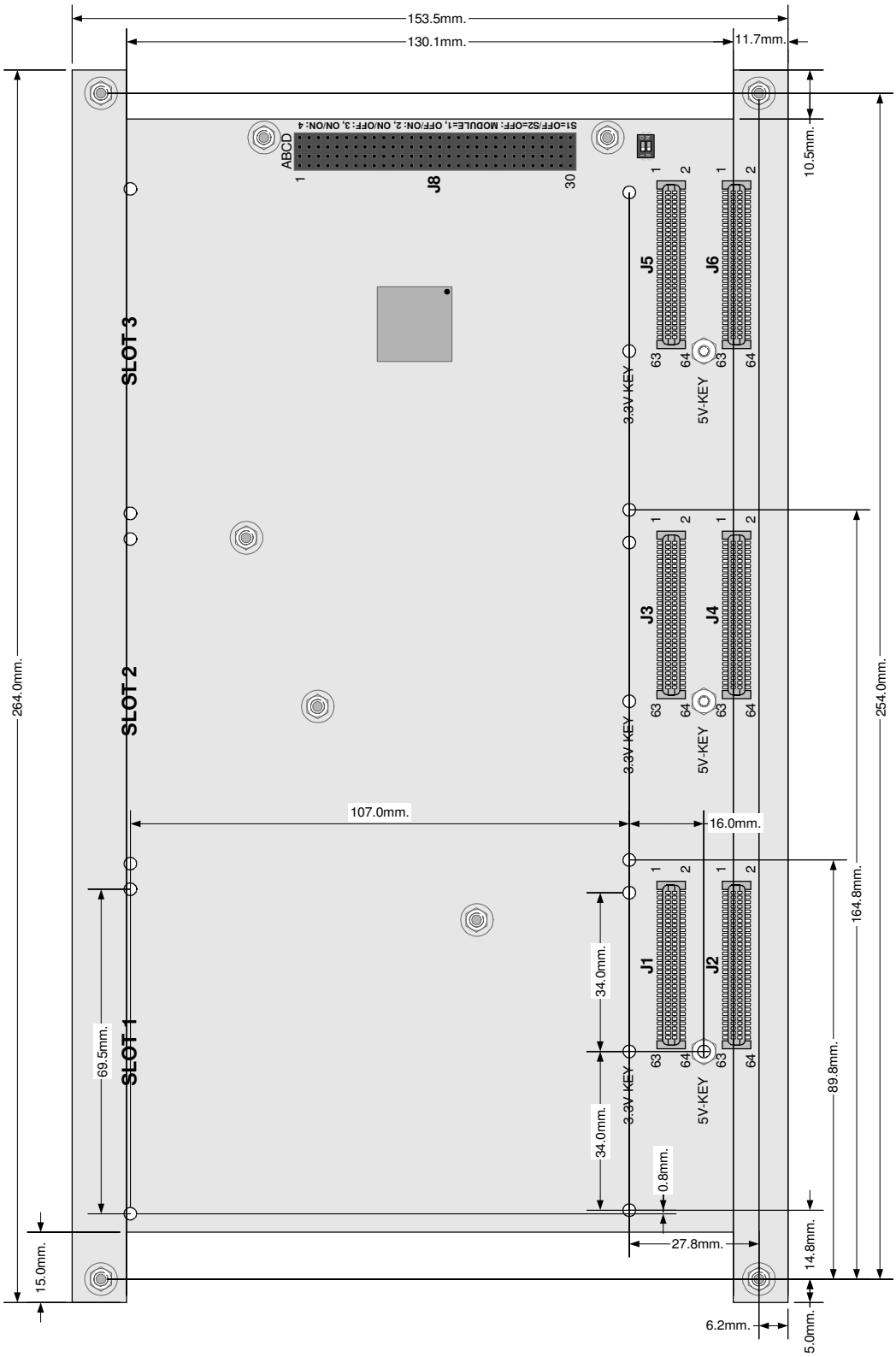


Figure 1: Location Of The Mounting Holes And PMC Slot Holes

3.2 PMC BASEBOARD CUT-OUTS IN A PIP FRONT PLATE

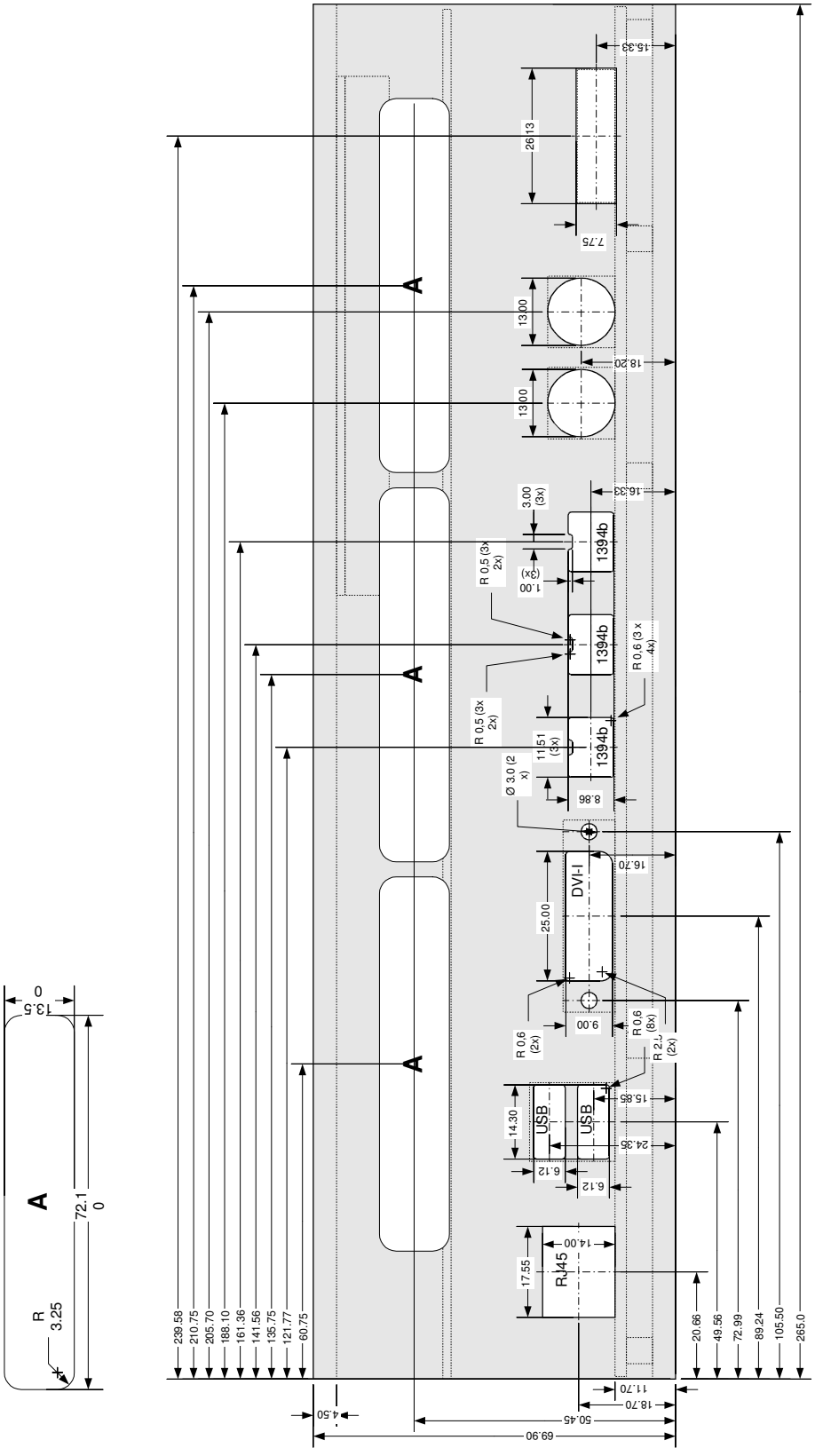
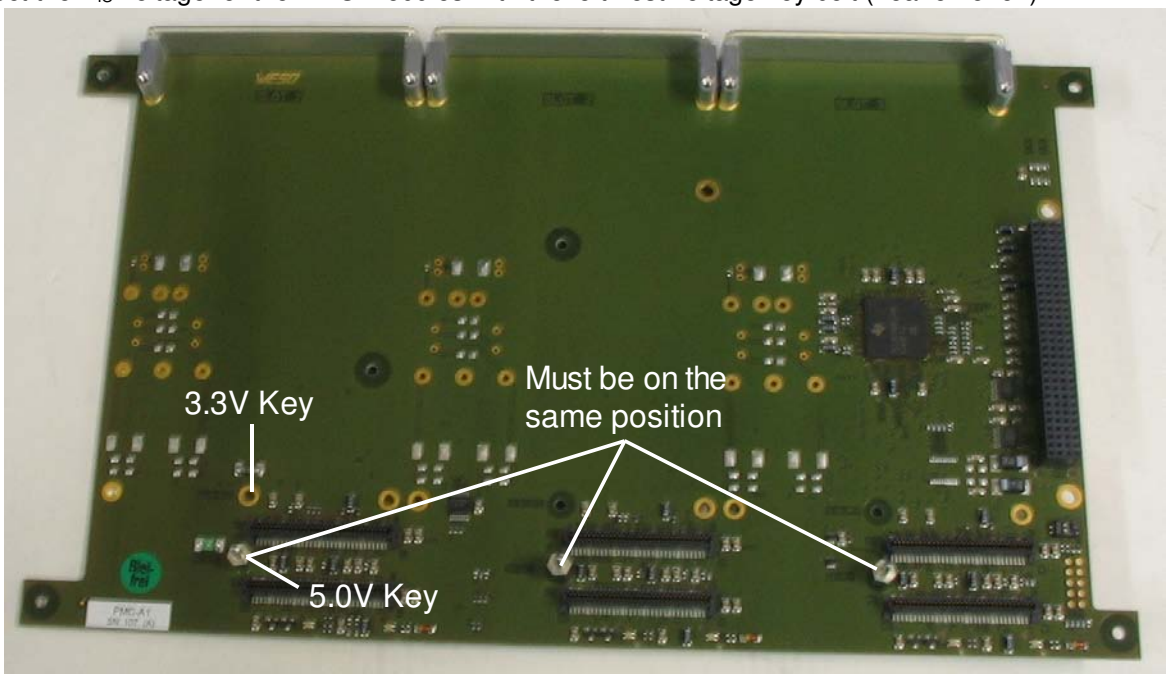


Figure 2: Front plate with the PMC Slot and the PIP10 connector cut-outs

3.3 ASSEMBLY

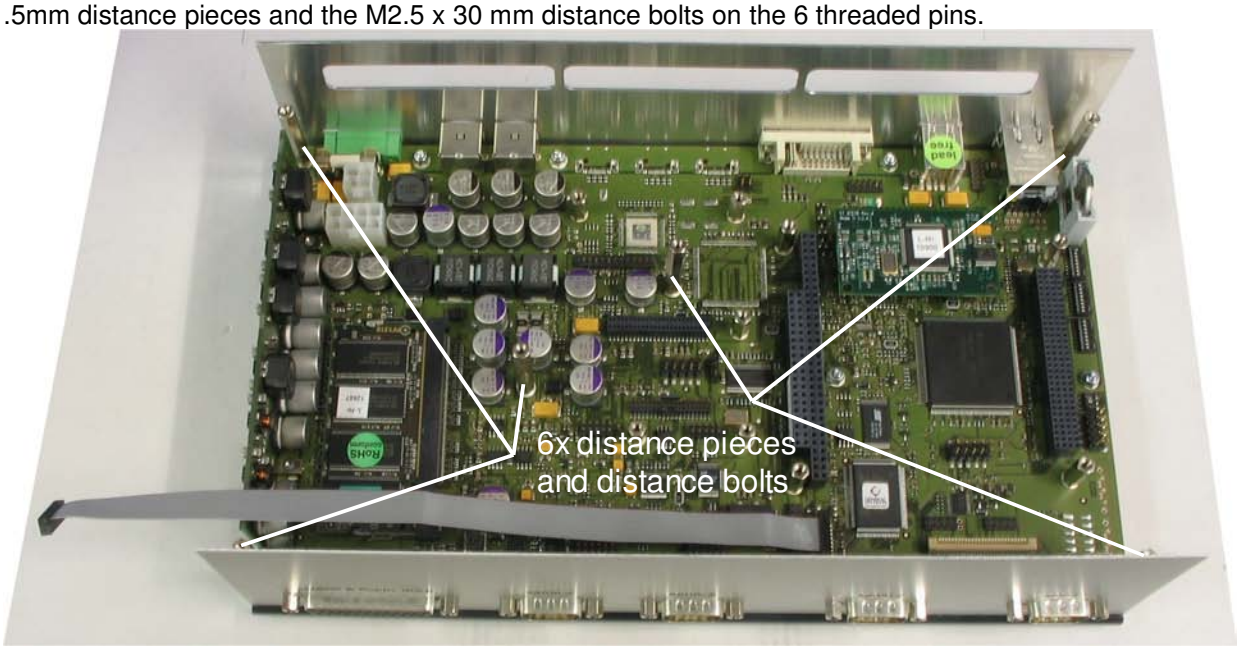
- Select the V_{IO} voltage for the PMC Modules with the leftmost voltage key bolt (near J1 or J2).



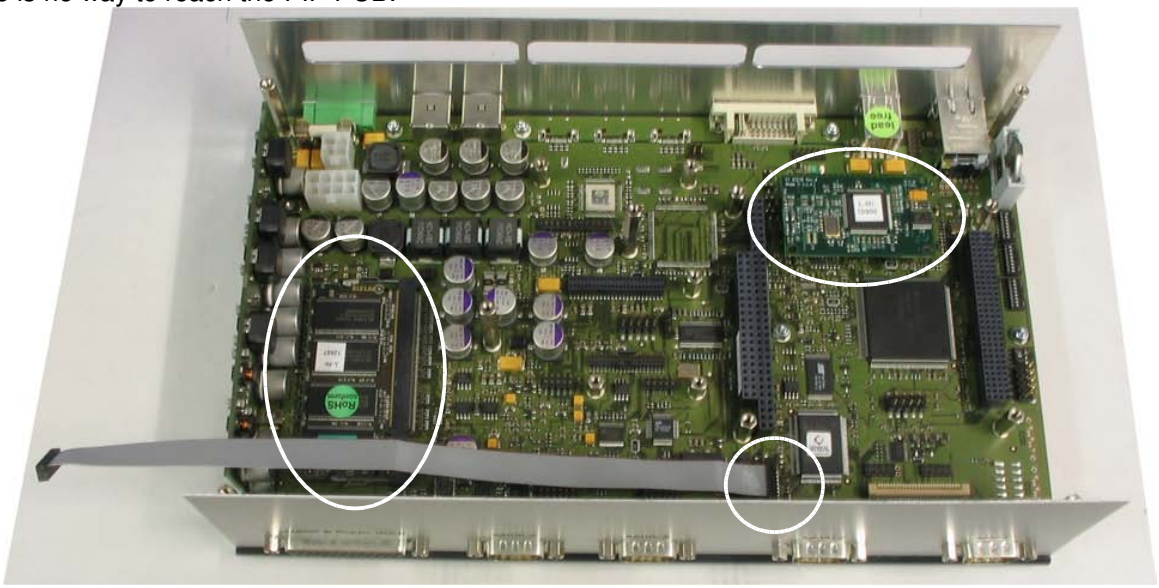
NOTE:

All three voltage key bolts must be either at 3.3V-KEY location or at 5V-KEY location. It is not possible to use different V_{IO} voltages on the PMC Baseboard, because the same PCI bus is used for all three PMC slots.

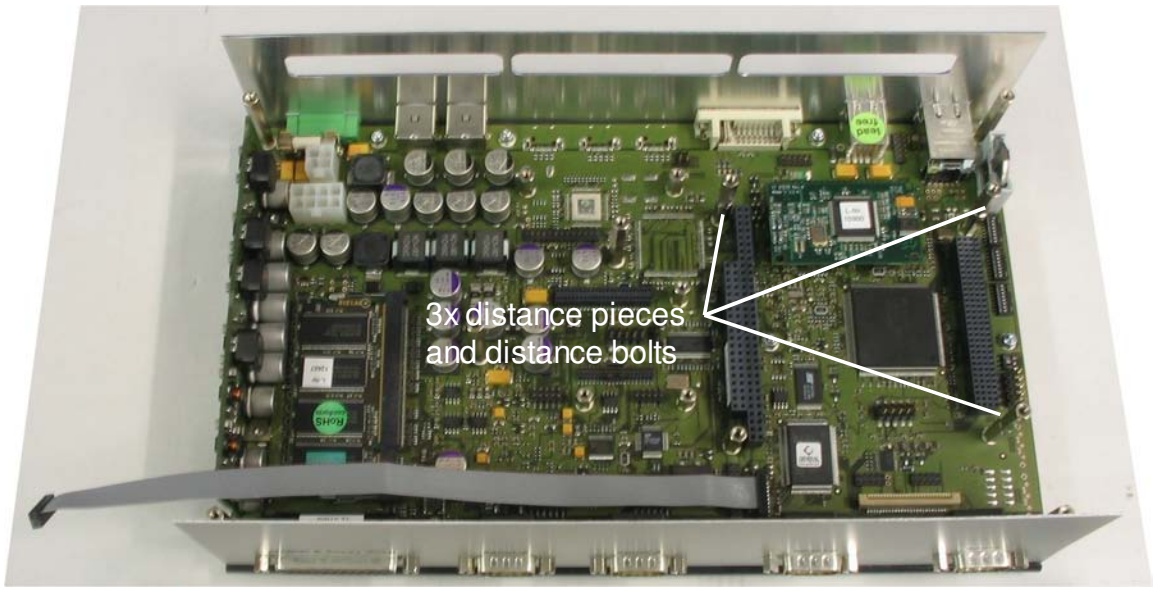
- Mount the PMC Module(s) on the PMC Baseboard with the four M2.5 screws.
- Loosen the 4 M2.5 nuts at the edges and the 2 M2.5 nuts on the center of the PIP, and place instead the 6 1.5mm distance pieces and the M2.5 x 30 mm distance bolts on the 6 threaded pins.



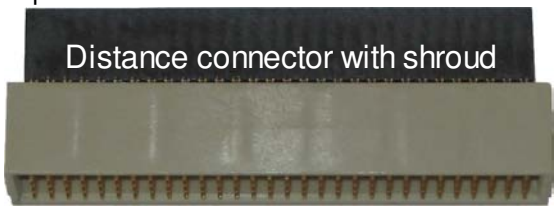
- Connect all needed cables, memory or other modules to the PIP PCB. If the PMC Baseboard is installed, there is no way to reach the PIP PCB.



- Either install a PC/104-*PLUS* (PC/104 is not possible) card and fix it with three M3 x 15 mm distance bolts or place three 1.5mm distance pieces and the M3 x 15 mm distance bolts on the PC/104-*PLUS* mounting bolts.



- If no PC/104-*PLUS* card is used place the distance connector to the PC/104-*PLUS* connector on the PIP.



- Install the PMC Baseboard an fix it with three M3 x 6 screws an four M2.5 x 6 screws.

3.4 CONNECTORS

3.4.1 PC/104-*PLUS* CONNECTOR (J8)

For more detailed information please refer to the PC/104-PLUS Specification, Rev. 2.0.

Number	Row A	Row B	Row C	Row D	Pin Assignment
1	GND	NC	+5 V	AD0	
2	V_{IO}	AD2	AD1	+5 V	
3	AD5	GND	AD4	AD3	
4	C/BE0	AD7	GND	AD6	
5	GND	AD9	AD8	M66EN	
6	AD11	V_{IO}	AD10	GND	
7	AD14	AD13	GND	AD12	
8	+3.3 V	C/BE1	AD15	+3.3 V	
9	SERR	GND	NC	PAR	
10	GND	PERR	+3.3 V	NC	
11	STOP	+3.3 V	LOCK	GND	
12	+3.3 V	TRDY	GND	DEVSEL	
13	FRAME	GND	IRDY	+3.3 V	
14	GND	AD16	+3.3 V	C/BE2	
15	AD18	+3.3 V	AD17	GND	
16	AD21	AD20	GND	AD19	
17	+3.3 V	AD23	AD22	+3.3 V	
18	IDSEL0	GND	IDSEL1	IDSEL2	
19	AD24	C/BE3	V_{IO}	IDSEL3	
20	GND	AD26	AD25	GND	
21	AD29	+5 V	AD28	AD27	
22	+5 V	AD30	GND	AD31	
23	REQ0	GND	REQ1	V_{IO}	
24	GND	REQ2	+5 V	GNT0	
25	GNT1	V_{IO}	GNT2	GND	
26	+5 V	CLK0	GND	CLK1	
27	CLK2	+5 V	CLK3	GND	
28	GND	INTD	+5 V	RST	
29	NC (+12 V)***1***	INTA	INTB	INTC	
30	NC (–12 V)***1***	REQ3	GNT3	GND	

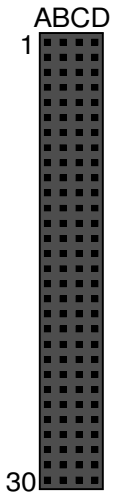


Figure 3: PC/104+ Connector (J8) (Connector: Samtec, PTHF-130-02-G-Q368)

Notes:

1 +/–12 V is not connected on the PMC Baseboard, because on PIP Hardware normally the +/–12 V are not supported. +/–12 V for the PMC Module slots are generated on PMC Baseboard if separately ordered.

3.4.2 PMC MODULE SLOT CONNECTORS Jn1 (J1, J3, J5)

For more detailed information please refer to the IEEE 1386-2001, IEEE Standard for a Common Mezzanine Card (CMC) Family and to the IEEE 1386.1-2001, IEEE Standard Physical and Environmental Layers for PCI Mezzanine Cards (PMC) specification.

Pn1/Jn1 32-bit PCI			
Pin	**Signal**	**Signal**	**Pin**
1	TCK	–12 V ***1**	2
3	Ground	INTA#	4
5	INTB#	INTC#	6
7	BUSMODE1#	+5 V	8
9	INTD#	PCI-RSVD*	10
11	Ground	NC (3.3 V_{AUX}) ***2**	12
13	CLK	Ground	14
15	Ground	GNT#	16
17	REQ#	+5 V	18
19	V_{IO}	AD[31]	20
21	AD[28]	AD[27]	22
23	AD[25]	Ground	24
25	Ground	C/BE[3]#	26
27	AD[22]	AD[21]	28
29	AD[19]	+5 V	30
31	V_{IO}	AD[17]	32
33	FRAME#	Ground	34
35	Ground	IRDY#	36
37	DEVSEL#	+5 V	38
39	Ground	LOCK#	40
41	PCI-RSVD*	PCI-RSVD*	42
43	PAR	Ground	44
45	V_{IO}	AD[15]	46
47	AD[12]	AD[11]	48
49	AD[09]	+5 V	50
51	Ground	C/BE[0]#	52
53	AD[06]	AD[05]	54
55	AD[04]	Ground	56
57	V_{IO}	AD[03]	58
59	AD[02]	AD[01]	60
61	AD[00]	+5 V	62
63	Ground	REQ64#	64

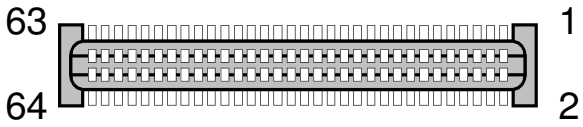


Figure 4: PMC Connector Jn1 (J1, J3, J5) (Connector: AMP, 5120521-1)

Notes:

***1** –12 V is only available if separately ordered.

***2** 3.3 V_{AUX} is not supported, this pin is not connected on the PMC Baseboard.

3.4.3 PMC MODULE SLOT CONNECTORS Jn2 (J2, J4, J6)

For more detailed information please refer to the IEEE 1386-2001, IEEE Standard for a Common Mezzanine Card (CMC) Family and to the IEEE 1386.1-2001, IEEE Standard Physical and Environmental Layers for PCI Mezzanine Cards (PMC) specification.

Jn2/Pn2 32-bit PCI			
Pin	**Signal**	**Signal**	**Pin**
1	+12 V***1**	TRST#	2
3	TMS	TDO	4
5	TDI	Ground	6
7	Ground	PCI-RSVD*	8
9	PCI-RSVD*	PCI-RSVD*	10
11	BUSMODE2#	+3.3 V	12
13	RST#	BUSMODE3#	14
15	3.3 V	BUSMODE4#	16
17	PME#	Ground	18
19	AD[30]	AD[29]	20
21	Ground	AD[26]	22
23	AD[24]	+3.3 V	24
25	IDSEL	AD[23]	26
27	+3.3 V	AD[20]	28
29	AD[18]	Ground	30
31	AD[16]	C/BE[2]#	32
33	Ground	PMC-RSVD	34
35	TRDY#	+3.3 V	36
37	Ground	STOP#	38
39	PERR#	Ground	40
41	+3.3 V	SERR#	42
43	C/BE[1]#	Ground	44
45	AD[14]	AD[13]	46
47	M66EN	AD[10]	48
49	AD[08]	+3.3 V	50
51	AD[07]	PMC-RSVD	52
53	+3.3 V	PMC-RSVD	54
55	PMC-RSVD	Ground	56
57	PMC-RSVD	PMC-RSVD	58
59	Ground	PMC-RSVD	60
61	ACK64#	+3.3 V	62
63	Ground	PMC-RSVD	64

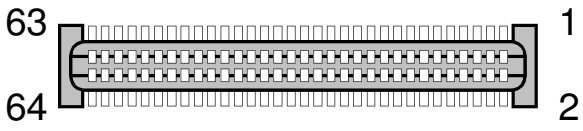


Figure 5: PMC Connector Jn2 (J2, J4, J5) (Connector: AMP, 5120521-1)

Notes:

1 +12 V is only available if separately ordered.

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MPL AG reserves the right to make changes to any product herein to improve reliability, function or design.

6 TRADEMARKS

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7 SUPPORT

7.1 SERIAL NUMBER AND REVISION

For support it is needed that you know the product name, the product variant and the serial number of your PMC Baseboard. Please have a look at the label on the PCB of the PMC Baseboard for this.

7.2 CONTACT MPL AG

In case of general information questions please feel free to contact us at our homepage (www.mpl.ch) or per email (info@mpl.ch).
In case of sales information questions please send an email to sales@mpl.ch.
If you have a technical problem with a PMC Baseboard, first please read carefully all the manuals mentioned in the section 1.6 RELATED DOCUMENTATION. If you can't solve the problem on your own you can contact us for technical support per email at support@mpl.ch.

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